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United States General Accounting Office
Fact Sheet for the Chairman,
Subcommittee on Readiness, Committee
on Armed Services, House of
Representatives

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AIR FORCE ADP

Logistics Systems Modernization Costs Continue to Increase

GAO

United States
General Accounting Office
Washington, D.C. 20548

Information Management and
Technology Division

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December 28, 1988

The Honorable Nicholas Mavroules
Chairman, Subcommittee on Readiness
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

In a November 9, 1987, letter, your predecessor requested that we review several aspects of the Air Force's Logistics Management Systems (LMS) Modernization Program. Specifically, we were asked to: 1) provide current cost and schedule information on the computerized systems undergoing modernization, 2) determine if developmental and operational problems were being resolved, and 3) examine the estimated benefits and cost savings are being achieved by the new systems that are operational.

During subsequent discussions with your office, we agreed to provide this interim report containing cost and schedule information on nine individual projects within the LMS program and four other automated information system projects managed by the Air Force Logistics Command, but not considered to be part of the formal LMS program. We plan to provide you with additional information on the concerns expressed in the Subcommittee's letter in by April 1989.

Background

The Air Force Logistics Command supplies spare parts and provides depot-level maintenance to keep United States Air Force units and weapon systems in a state of readiness. The Command relies on computer technology to provide the enormous amounts of timely and accurate information needed to accomplish its mission. In the early 1980s, the Air Force initiated several individual projects to modernize its automated logistics systems. In November 1984, the Department of Defense Major Automated Information System Review Council authorized the Command to combine several individual projects into a single program, the LMS Modernization Program. The Command also manages a number of other system modernization projects that support the Command's mission. This report includes information on the nine original LMS projects and four other system modernization projects managed by the Command.

Status of Modernization Projects

Since the LMS program was established in 1984, its program costs have increased; the overall schedule for completing the program has been extended by 4 years; and its scope has been reduced—the number of existing systems to be replaced with the nine modernized systems has decreased from 94 to 72. Cost and project completion information on the nine projects of the LMS program is shown in the following two tables. Table 1 provides data on the changes in estimated acquisition costs and table 2 shows the changes in estimated completion dates. Four other modernization projects have been initiated since the LMS program was established in 1984. Table 3 provides cost and estimated completion information for these projects.

Table 1: Estimated Acquisition Costs for Logistics Management Systems

Dollars in millions

Project	March 1985[a]	Revised July 1988	Change
Requirements Data Bank	$136.5	$248.2	$111.7
Weapon Systems Management Information System	47.4	44.2[b]	−3.2
Contracting Data Management System	35.3	73.8	38.5
Stock Control and Distribution	202.2	203.0	0.8
Enhanced Transportation Automated Data System	5.5	12.0	6.5
Depot Maintenance Management Information System	82.9	242.4	159.5
Engineering Data Computer-assisted Retrieval System	32.7	29.8[b]	−2.9
Local Area Network	151.0	125.8	−25.2
Intersite Gateway	21.9	15.1	−6.8
Total	**$715.4**	**$994.3**	**$278.9**

[a]Although the LMS program was established in November 1984, estimated costs for each of the nine projects was not available until March 1985.

[b]Actual cost. Project is considered complete.

Table 2: Scheduled Completion Dates for Logistics Management Systems

Project	Estimated completion date, as of March 1985	June 1988	Change (months)
Requirements Data Bank	April 1989	September 1994	65
Weapon Systems Management Information System	September 1987	September 1987[a]	0
Contracting Data Management System	September 1990	March 1994	42
Stock Control and Distribution	January 1989	September 1990	20
Enhanced Transportation Automated Data System	December 1986	July 1988[b]	19
Depot Maintenance Management Information System	February 1989	September 1993	55
Engineering Data Computer-assisted Retrieval System	February 1987	October 1987[a]	8
Local Area Network	July 1990	July 1990	0
Intersite Gateway	December 1987	June 1989	18

[a]Actual completion date

[b]Air Force has not officially changed this date. It is, however, expected to be revised because the contract was terminated for default.

Air Force estimates of costs to complete the nine initial projects have increased from $715.4 million in 1985, to a current estimate of $994.3 million. In early 1985, the Air Force had planned to complete the LMS projects in 1990. Two projects have been completed and the completion dates for the remaining seven projects range up to September 1994. Slippages in the expected completion dates for individual projects range from 0 to 65 months. The most common reasons project managers gave for cost increases and schedule slippages were the lack of clearly defined requirements and/or underestimating project complexity in the early stages of system development. Appendix I contains a general description of and information on the nine individual LMS projects.

The four other Air Force computer systems being modernized are not considered, by the Air Force, as part of the formal LMS program established in 1984. The Air Force estimates that these four modernization projects, listed in table 3 below, will cost more than $200 million. Only one of the four projects, Phase I of the Automated Technical Order System, is considered by the Air Force to be operational. Appendix II contains a general description and information on the four projects.

Table 3: Project Costs and Schedule Estimates for Other Air Force Logistics Command-managed Projects

Dollars in millions

Project	Estimated cost	Estimated completion date
Reliability and Maintainability Information System	$86.1	January 1990
Central Procurement Accounting System	11.7	July 1989
Air Force Equipment Management System	77.3	June 1993
Automated Technical Order System (Phase I)	30.6	March 1987[a]
Total	**$205.7**	

[a]Actual date of full operation. Changes are programmed for fiscal years 1989-1992.

Objective, Scope, and Methodology

The cost and schedule information presented is based on published Air Force documents or information obtained from Air Force officials between June 1987 and August 1988. As agreed with your office, we did not independently assess the validity of the data. We obtained the views of responsible agency officials during the course of our work and included their comments where appropriate. Appendix III provides detailed information on our objective, scope, and methodology.

As arranged with your office, unless you publicly announce the contents of this document earlier, we plan no further distribution of this fact sheet until 30 days from the date of this letter. At that time, copies of this report will be provided to the Secretary of Defense, the Secretary of the Air Force, the Chairman, Senate Committee on Armed Services, and the Chairmen, House and Senate Committees on Appropriations. We will make copies available to other interested parties upon request. This report was prepared under the direction of William S. Franklin, Associate Director. Other major contributors are listed in appendix IV.

Sincerely yours,

Daniel C. White

Ralph V. Carlone
Assistant Comptroller General

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Abbreviations

ADP	automated data processing
AFLC	Air Force Logistics Command
GAO	General Accounting Office
IMTEC	Information Management and Technology Division
LMS	Logistics Management Systems

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Summary Information on Individual Logistics Management Systems Projects

The summary information that follows was obtained from the Air Force and includes (1) a description of each project; (2) general information, including an Air Force Logistics Command (AFLC) assessment of the project status;[1] (3) estimated project costs; (4) estimated project schedules; and (5) contract information. Table I.1 includes information on the obligation of funds for each project and the percent to which each system is operational. Table I.2 includes information on the number of systems that are planned for replacement as compared to the number that have been replaced as a result of LMS project developments.

Table I.1: Logistics Management Systems Obligations Compared to System Functionality

Dollars in millions

Project	Obligations as of July 1988	Percent of current cost estimate obligated	Percent of system operational capability July 1988[a]
Requirements Data Bank	$110 5	44 5	32 0[b]
Weapon Systems Management Information System	44 2[f]	100 0	100 0[c]
Contracting Data Management System	20 8	28 2	2 0[d]
Stock Control and Distribution	149 9	73 8	13 0[b]
Enhanced Transportation Automated Data System	11 7[f]	97 5	10 0[b]
Depot Maintenance Management Information System	52 0	21 5	15 0[d]
Engineering Data Computer-assisted Retrieval System	29 5[f]	99 0	100 0[c]
Local Area Network	119 9	95 3	83 0[e]
Intersite Gateway	14 7	97 4	90 0[e]

[a]In response to our request for percent completion, the Air Force Logistics Command responded that there was no recommended standard methodology for calculating the completion percentage of information system development programs. Instead of percent completed, the Logistics Command provided the percent of operational capability (based on factors such as those presented in the following footnotes) for each LMS project. The percent of operational capability may not represent the actual amount of work completed on a project.

[b]Ratio of lines of computer code written to projected lines of code the system is expected to use.

[c]Based on the system having achieved full operational capability.

[d]Program manager's estimate.

[e]Based on the ratio of actual communication installations to the number planned.

[f]Does not include obligations for maintenance.

[1]The Command's assessment is based on the project manager's assessment of the system in ten key system development categories such as schedule, system readiness, and funding status using satisfactory, marginal, or unsatisfactory ratings.

Table I.2: Systems Replaced as a Result of Logistics Management Systems Development

Project	Estimated number of systems to be replaced, as reported by AFLC as of		Actual number of systems replaced, as of
	October 1986	July 1988	July 1988
Requirements Data Bank	22	21	0
Weapon Systems Management Information System	0	0	N/A
Contracting Data Management System	7	7	0
Stock Control and Distribution	21	13	0
Enhanced Transportation Automated Data System	5	5	0
Depot Maintenance Management Information System	38	25	5
Engineering Data Computer-assisted Retrieval System	0	0	N/A
Local Area Network	0	0	N/A
Intersite Gateway	1	1	0
Total	**94**	**72**	**5**

Requirements Data Bank

Description

The Requirements Data Bank system is being developed to compute the material quantities and budgets needed to support weapon systems and other equipment. It also is to be used to compute worldwide requirements, budgets, and plans for spare and repair parts and equipment needs. This system is being designed to have the capability to simulate options or possible results through "what if" scenarios. These simulations are expected to provide Air Force managers with accurate readiness assessments and the impacts of these assessments.

General Information

- The system is estimated to require 3,700,000 lines of computer code.
- The system is estimated to require 1,439 terminals.
- The overall program assessment, as reported in the Air Force Logistics Command LMS Quarterly Progress Report (June 1988), is rated marginal. This rating is due to the program's schedule slippage, cost increases, and contract changes and negotiations.
- Computer mainframes have been installed at Headquarters, Air Force Logistics Command, and all five Air Logistics Centers.

Project Cost Status

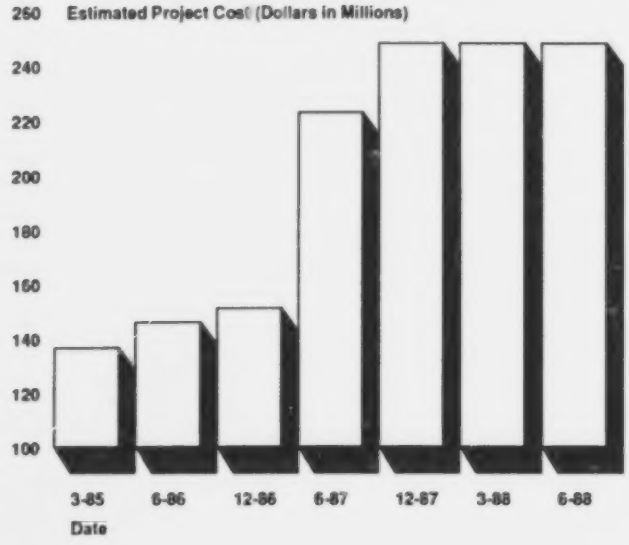
Table I.3: Requirements Data Bank Costs and Obligations

Dollars in millions	
Estimated project cost	$248.2
Operation and maintenance (software)	208.3
Other procurement (hardware)	39.9
Approved funding	$248.2
Total obligations	$110.5
Obligations (software)	87.8
Obligations (hardware)	22.7

- Since March 1985, the estimated project cost has increased from $136.5 million to $248.2 million (see figure I.1).
- Project officials attribute the cost increase to two major factors—a lack of detailed requirements and a planned conversion from a cost-plus-award-fee contract to a fixed-price-incentive-fee contract.

- An independent Logistics Command Comptroller's cost analysis (October 1987) estimated the Requirements Data Bank cost at $281.9 million. The major difference between this figure and the $248.2 million program manager's estimate is that the Comptroller's analysis included in-house personnel costs.

Figure I.1: Requirements Data Bank Cost



Estimated Project Schedule

- From March 1985 to March 1988, the estimated date of completion for the project changed from April 1989 to September 1994.
- Project officials attribute the increased development time to "incompletely" defined initial requirements and to the changing of development strategies after the second year of development.

Contract Information

- A cost-plus, development contract was awarded to the BDM Corporation in January 1985.
- Contract negotiations to convert the BDM development contract from a cost-plus-award-fee contract to a fixed-price-incentive-fee contract were completed in July 1988.

Weapon Systems Management Information System

Description

The Weapon Systems Management Information System is an automated information management modeling tool for assessing the capability of weapon systems to conduct effective combat missions. It identifies logistics resources limiting wartime capability and determines corrective actions. The system became fully operational at all sites on September 30, 1987.

General Information

- The system has an estimated 716,000 lines of computer code.
- The system requires the use of 50 terminals.

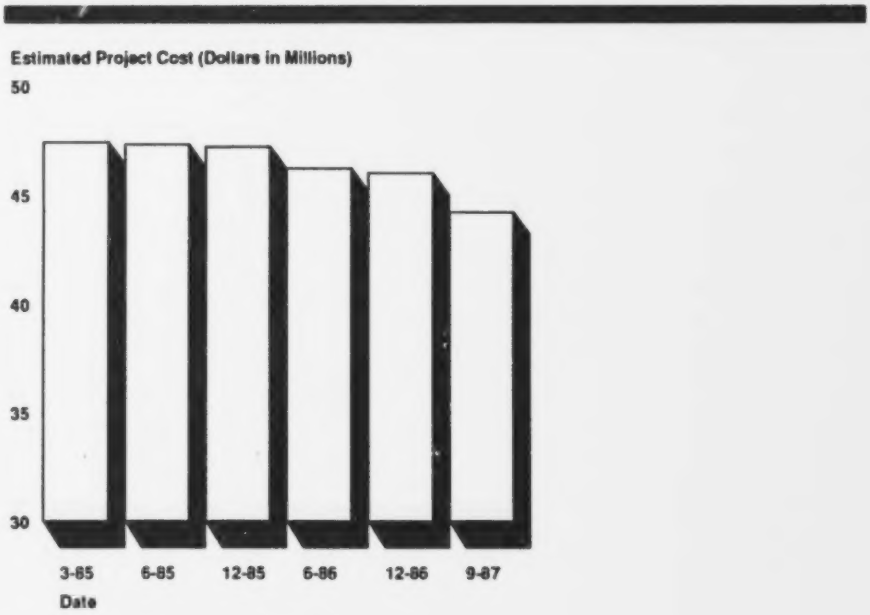
Project Cost Status

Table I.4: Weapon Systems Management Information System Cost and Obligations

Dollars in millions	
Project cost	$44.2
Operation and maintenance (software)	32.1
Other procurement (hardware)	12.1
Approved funding	$44.2
Total obligations	$44.2
Obligations (software)	34.2
Obligations (hardware)	10.0

- The March 1985 estimated project cost has decreased from $47.4 million to $44.2 million (see figure I.2).

Figure I.2: Weapon Systems Management Information System Cost



Note: This system became fully operational in 1987.

Contract Information

- Development contracts were firm-fixed-price.
- Major software contractors were Dynamics Research Corporation, the Analytic Sciences Corporation, and Synergy.
- Major hardware contractors were Honeywell and Amdahl.

Contracting Data Management System

Description

This system is designed to manage contracting information by weapon system and automate the input of data from various sources. This project is to be developed and designed in two phases to improve many tasks in the acquisition process. Phase I is intended to streamline and automate the contract production process, including the preparation of acquisition packages, requests for proposals, and contracts. Phase II will build on the foundation established in phase I with additional functions to improve the capability to manage contracts and deal with surge requirements. Tasks intended to be improved include preparation of purchase requests and contracts; price history; contract information; and accurate, on-line item delivery schedules. The system is expected to accomplish full compatibility with the Defense standards for contract administration data transfer (Military Standard Contract Administration Procedures).

General Information

- The system is estimated to require 1,200,000 lines of computer code.
- The system is estimated to require the purchase of 354 terminals.
- The system is being operated on computer equipment acquired for the Stock Control and Distribution system.
- The overall program assessment, as reported in the Air Force Logistics Command LMS Quarterly Progress Report (June 1988), remains marginal trending upward pending implementation of activities required over the next few months as a result of program restructuring. These activities include conclusion of contract negotiations, execution of contract changes, and completion of an independent cost analysis of the restructured program.

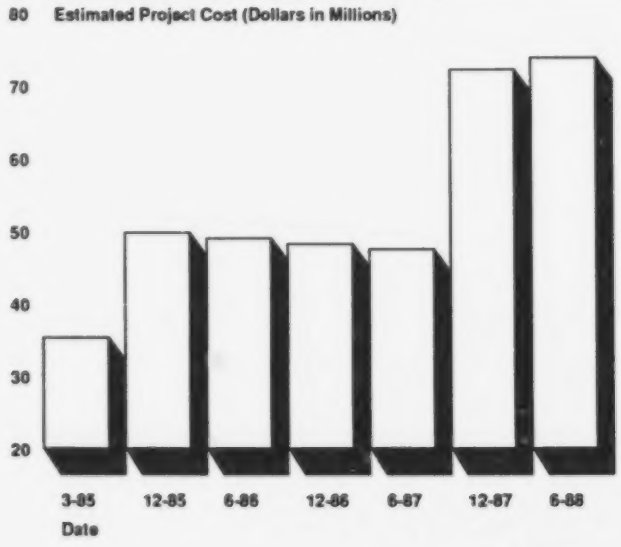
Project Cost Status

Table I.5: Contracting Data Management System Cost and Obligations

Dollars in millions	
Estimated project cost	$73.8
Operation and maintenance (software)	56.5
Other procurement (hardware)	17.3
Approved funding	$73.8
Total obligations	$20.8
Obligations (software)	14.6
Obligations (hardware)	6.2

- The initial Contracting Data Management System baseline cost (March 1985) increased from $35.3 million to $47.3 million with the addition of the Competition Advocate Automation Initiatives and the Materiel Management Electronic Purchase Request Initiative to the program. Following an information engineering system analysis, additional requirements were identified and a $26.5 million increase was added to the cost estimate. This increase was needed to satisfy requirements and provide training for the system's users (see figure I.3).

Figure I.3: Contracting Data Management System Cost



Estimated Project Schedule

- The March 1985 estimated date for project completion has changed from September 1990 to March 1994, representing a schedule slippage of 42 months. In part, this schedule change can be attributed to an information engineering study, completed by the Air Force in April 1988, that identified a high probability of disconnects between program requirements and baseline cost and schedule projections. As a result of the information engineering study, the program was restructured. According to the project manager, the results of the information engineering study increased the functional requirements and system development time. The study also provided a better understanding of the costs and requirements associated with developing the system.
- The phase I functional description was revised to incorporate program requirements derived from the information engineering study.
- The restructured schedule calls for phase I to be fully operational in March 1991.

Contract Information

- The phase I request for proposals was issued in April 1986.
- A firm-fixed-price (for hardware) cost-plus (for software and maintenance) contract for phase I was awarded during September 1986 to Integrated Microcomputer Systems, Incorporated.
- The phase II request for proposals release is scheduled for March 1990 with a contract award expected in September 1990.
- Phase II is planned to be a fully competitive acquisition with full operational capability expected in March 1994.

Stock Control and Distribution

Description

A modernized Stock Control and Distribution system is being designed to reduce order and shipping time and provide item managers with immediate access to current information. The primary functions are processing requisitions and reporting the status of orders to customers. The system is intended to provide better control over the storage, allocation, and movement of materials to the customer.

General Information

- The system is estimated to require 2,400,000 lines of computer code.
- The system is expected to require the purchase of 3,350 terminals.
- The overall program assessment is rated marginal, trending upward because of program funding shortfall according to the Air Force Logistics Command LMS Quarterly Progress Report (June 1988).
- This system is planned to upgrade and integrate 13 existing stock control and distribution computer systems into one on-line system.
- The main system central site hardware has been installed at all five Air Logistics Centers and Headquarters, Air Force Logistics Command.

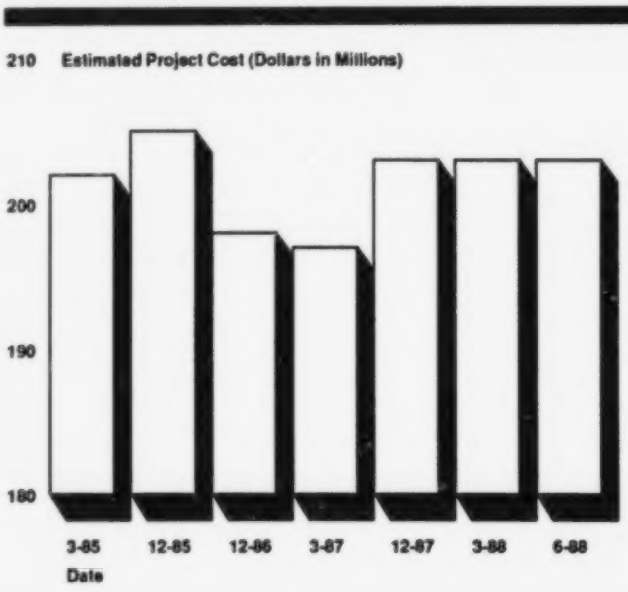
Project Cost Status

Table I.6: Stock Control and Distribution Cost and Obligations

Dollars in millions	
Estimated project cost	$203.0
Operation and maintenance (software)	144.1
Other procurement (hardware)	$58.9
Approved funding	$197.5
Total obligations	$149.9
Obligations (software)	99.8
Obligations (hardware)	50.1

- The March 1985 estimated project cost has not increased significantly (See figure I.4).

Figure I.4: Stock Control and Distribution Cost



Estimated Project Schedule

- The March 1985 estimated project completion date of January 1989 has slipped to September 1990. This represents a delay of 20 months. Project officials attribute the schedule slippage to an overly optimistic initial schedule estimate and the discovery that the requirements were more complex than originally estimated.

Contract Information

- The development contract is a cost-plus-award-fee (for hardware) firm-fixed-price (for software and maintenance) hybrid contract.
- The development contractor is Computer Sciences Corporation.
- The request for proposals was issued in November 1984. The contract was awarded in June 1986.

Enhanced Transportation Automated Data System

Description

This system is to provide direct management control over finances for material transportation to ensure compliance with public law Department of Defense directives. It is designed to improve management control of cargo distribution from shipment to final receipt.

General Information

- The system is expected to require an estimated 427,000 lines of computer code.
- The system is expected to require the purchase of 27 terminals.
- The overall program assessment is rated unsatisfactory in the Air Force Logistics Command LMS Quarterly Progress Report (June 1988). This rating is attributed to the contract being terminated for default in December 1987, thus causing the program's development schedule and completion strategy to be reviewed.
- An automated schedule subsystem for trucks has been implemented that allows analysts to do route analyses and contract negotiations using online data.
- One of four subsystems is operational.

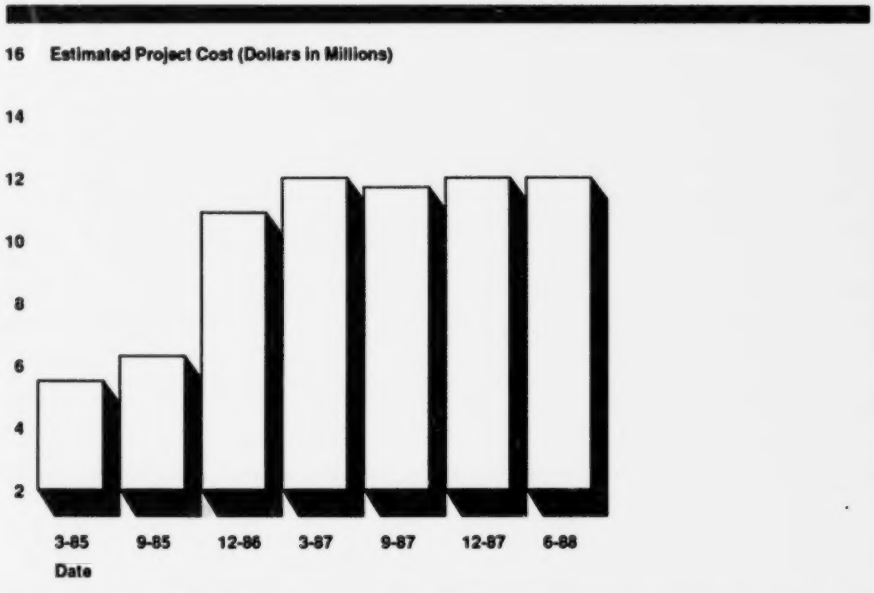
Project Cost Status

Table I.7: Enhanced Transportation Automated Data System Cost and Obligations

Dollars in millions	
Estimated project cost	$12.0
Operation and maintenance (software)	10.8
Other procurement (hardware)	1.2
Approved funding	11.7
Total obligations	$11.7
Obligations (software)	10.5
Obligations (hardware)	1.2

- The estimated project cost has increased since March 1985 from $5.5 million to $12.0 million (see figure I.5). Air Force officials are currently reassessing program cost estimates because of the contract's termination. Project officials attribute the cost increase to the renegotiation of the earlier contract, an overly optimistic initial estimate of project completion, additional hardware requirements, better cost estimates, and program changes.

Figure I.5: Enhanced Transportation Automated Data System Cost



Estimated Project Schedule

- Since March 1985, the estimated project completion date has slipped from December 1986 to July 1988. This date has not been officially changed by the Air Force, however, it is expected to be revised. An independent validation and verification contractor, Deloitte, Haskins and Sells, was to determine the status of the deliverables from the terminated development contract. The review was completed in April 1988 and the results of their assessment are being used to help determine the strategy for completing the program.

Contract Information

- A request for proposals was issued in April 1985.
- The contract was awarded in September 1985 to Automated Sciences Group.
- The original contract, a cost-plus-fixed-fee, was negotiated to a fixed-price contract in June 1987. The contract, however, was terminated for default by the Air Force on December 30, 1987.

Depot Maintenance Management Information System

Description

The Depot Maintenance Management Information System is being developed to integrate the management of depot repair functions. Its purpose is to provide for effective planning of all the resources used by depot maintenance including facilities, personnel, tools, equipment, and funds. It addresses a variety of functions such as long-range planning, production planning and scheduling, and material requirements planning. For all users, it is to provide on-line access to current maintenance management information. The design and development of this system is planned to be accomplished in three phases. Phase I is an interim effort for improved management of the maintenance inventory centers. Phase II will incorporate industry accepted manufacturing resources planning concepts for functions such as automated forecasting, inventory control, requirements planning, and shop floor scheduling. Phase II is to be implemented at the Ogden Air Logistics Center. Phase III will incrementally implement the final design at other Air Logistics Centers.

General Information

- The system is estimated to require 405,000 lines of computer code.
- The system is estimated to require the purchase of 3,675 terminals.
- The overall program assessment is rated satisfactory according to the Command LMS Quarterly Progress Report (June 1988).

Project Cost Status

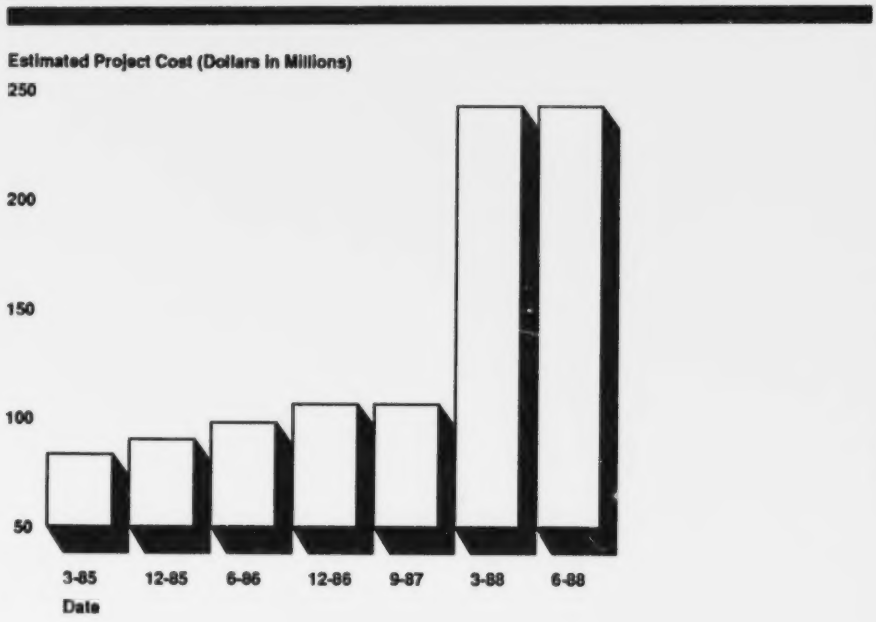
Table I.8: Depot Maintenance Management Information System Cost and Obligations

Dollars in millions	
Estimated project cost	$242.4
Operation and maintenance (software)	10.6
Other procurement (hardware)	3.8
Depot maintenance industrial fund[a]	228.0
Approved funding	$242.4
Total obligations	$52.0
Obligations (software)	2.2
Obligations (hardware)	2.6
Obligations (depot maintenance industrial fund)	47.2

[a]An industrial fund is a special type of revolving fund used to finance the operating cost of an industrial or commercial activity or installation in the Department of Defense. The fund is used to finance the payment of all operating costs as well as investments in expense inventories and work in process, and is reimbursed for full costs, including overhead paid from the fund, through the prices charged for the products and services sold to customers.

- The March 1985 estimated project cost has been increased from $82.9 million to $242.4 million (see figure I.6). According to project officials, the initial cost estimate was significantly understated and had to be revised to include additional costs for several requirements such as remote equipment purchases, additional task orders, and independent validation and verification costs. Both project cost and schedule were reexamined after the contract was awarded to Grumman Data Systems, Incorporated, in January 1988. The review was completed in May 1988.

Figure I.6: Depot Maintenance Management Information System Cost



Estimated Project Schedule

- The estimated date of completion for the project, made in March 1985, has changed from February 1989 to September 1993, representing a schedule slippage of 55 months. Project officials attribute the increased development time to a management effort to spread funding requirements out more evenly in the acquisition cycle.
- Full operational capability for phase I was achieved in July 1988.
- Full operational capability for phases II and III is planned for September 1993.

Contract Information

- A phase I contract for hardware was issued to Tandem in July 1985.
- A request for proposals for phases II and III was issued in August 1986.
- A firm-fixed-price contract was awarded for the development of phases II and III to Grumman Data Systems, Incorporated, in January 1988.

Engineering Data Computer-assisted Retrieval System

Description

This retrieval system automates the receipt, requisitioning, indexing, filing, retrieval, and distribution of engineering drawings. It is a paperless system for storing engineering drawings for maintenance modification and engineering evaluation. Full operational capability was achieved on October 15, 1987, with the system operating at all five Air Logistics Centers.

General Information

- The system requires an estimated 200,000 lines of computer code.
- The system uses 244 terminals.
- Joint Army/Air Force development was managed by the Army.
- The system's reliability at each Air Logistics Center has been 98 percent or better.
- Life-cycle benefits are valued at over $150 million.

Project Cost Status

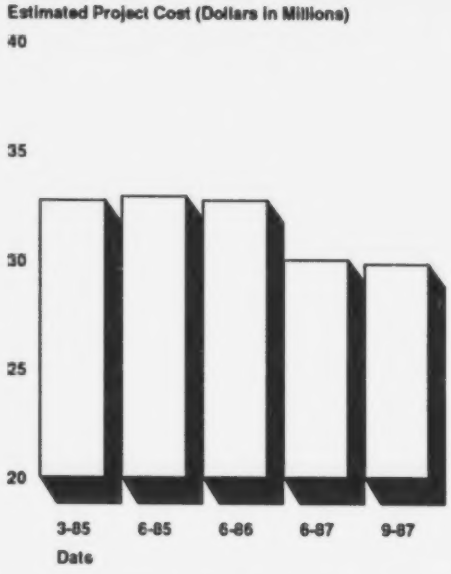
Table I.9: Engineering Data Computer-assisted Retrieval System Cost and Obligations

Dollars in millions	
Project cost	$29.8
Operation and maintenance (software)	4.8
Other procurement (hardware)	25.0
Approved funding	$29.8
Total obligations	$29.5
Obligations (software)	4.8
Obligations (hardware)	24.7[a]

[a]As of August 1988, $300,000 for graphics terminals remain unobligated.

- The system was developed for about $2.9 million less than the March 1985 estimate (see figure I.7).

Figure I.7: Engineering Data Computer-assisted Retrieval System Cost



Note: This system became fully operational in 1987.

Contract Information

- The request for proposals was issued in March 1984.
- A firm-fixed-price contract was awarded to American Telephone and Telegraph Technologies in August 1984.
- The contractor met or exceeded all contractual requirements.

Local Area Network

Description

The Local Area Network, located at each major Air Force Logistics Command installation, is intended to provide the medium to tie various logistics programs together and make them accessible to users. It is planned to provide terminal to computer communications. As part of this network, computer to computer communications between different systems at each site are planned.

General Information

- No terminals are needed for this project.
- The overall program assessment, according to the Air Force Logistics Command LMS Quarterly Progress Report (June 1988), is rated marginal, trending upward. This assessment is based on a readjustment to the funding that may affect the planned, full operational capability date and some improvements to system readiness and personnel status.
- The first phase (block one) of the Local Area Network program, known as "quick connect," was operational at all five Air Logistics Centers in May 1986.
- Full operational capability was attained at the Air Force Logistics Command in October 1985, and is scheduled to be achieved in July 1990 at the Air Logistics Centers.

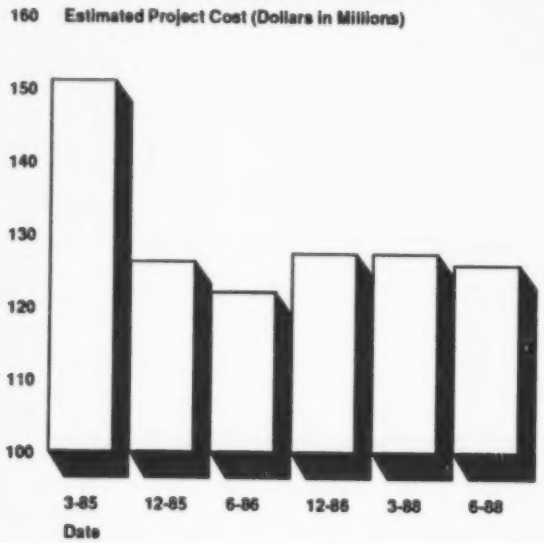
Project Cost Status

Table I.10: Local Area Network Cost and Obligations

Dollars in millions	
Estimated project cost	$125.8
Operation and maintenance (software)	104.5
Other procurement (hardware)	21.3
Approved funding	$125.8
Total obligations	$119.9
Obligations (software)	113.0
Obligations (hardware)	6.9

- The March 1985 estimated project cost has decreased from $151.0 million to $125.8 million (see figure I.8).

Figure I.8: Local Area Network Cost



Estimated Project Schedule

- The July 1990 estimated date of completion for the project has not changed since March 1985.

Contract Information

- A request for proposals was issued in April 1985.
- Contracts were awarded in September 1985.
- Firm-fixed-price contracts were awarded to Information Systems and Networks Inc. for Headquarters, Air Force Logistics Command, and to TRW Defense Systems Group for the Air Logistics Centers.

Intersite Gateway

Description

This communications system will support intersite system communications at Headquarters, Air Force Logistics Command, and the five Air Logistics Centers.

General Information

- The system will consist of two separate communications gateway (or network interfacing) systems. One is the Defense Data Network gateway, the other is the Autodin gateway.
- The Autodin gateway is estimated to have 250,000 lines of computer code.
- The Defense Data Network gateway will not require the development of computer code under this project.
- The overall program assessment, according to the Command LMS Quarterly Progress Report (June 1988), is rated satisfactory trending downward. This assessment is based on the existence of some interface problems that are being investigated.
- The system's Autodin interface attained initial operational capability at Headquarters, Air Force Logistics Command, in January 1988. The Autodin gateway was implemented at the Air Logistics Centers in May 1988.

Project Cost Status

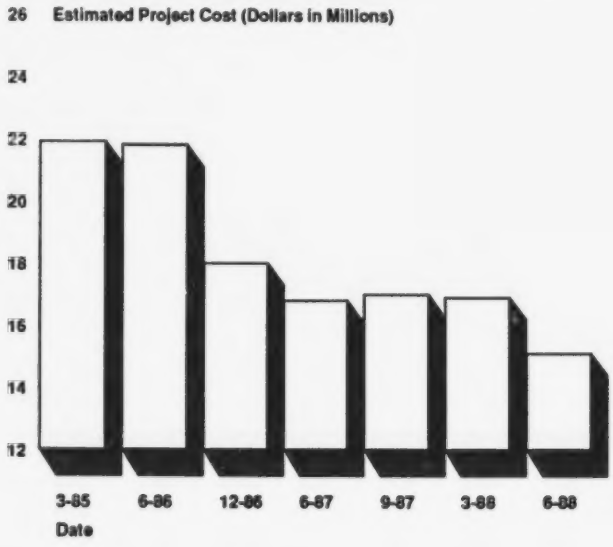
Table I.11: Intersite Gateway Cost and Obligations

Dollars in millions	
Estimated project cost	$15.1
Operation and maintenance (software)	11.2
Other procurement (hardware)	3.9
Approved funding	$15.1
Total obligations	$14.7
Obligations (software)	11.1
Obligations (hardware)	3.6

- The estimated project cost for completion has decreased from $21.9 million in March 1985 to $15.1 million in July 1988. The most recent reductions in cost occurred between December 1987 and June 1988; operation and maintenance funds were reduced by $900,000 and procurement

funds were reduced by $1 million. The operation and maintenance reduction was based on lower than expected fiscal year 1988 Autodin Intersite Gateway maintenance costs due to an extended hardware acceptance schedule. A lower than expected cost of the Defense Data Network Intersite Gateway equipment resulted in the procurement funds reduction (see figure I.9).

Figure I.9: Intersite Gateway Cost



Estimated Project Schedule

- Since March 1985, the estimated date of completion for the project has changed from December 1987 to June 1989, representing a schedule slippage of 18 months. Project officials attribute the slippage to a delay in awarding the development contract, integration problems, and the need to correct defective software.
- Autodin gateway initial operational capability was achieved in January 1988 and the Autodin gateway full operational capability is planned for October 1988.
- A Defense Data Network gateway prototype was installed at Wright-Patterson Air Force Base in July 1988. Based on successful prototype testing results, equipment will then be ordered for all Air Logistics Centers.
- Full operational capability for the Defense Data Network gateway is planned for June 1989.

Contract Information

- The Autodin gateway request for proposals was issued in February 1986.
- The Autodin gateway contract was awarded in August 1986. The Autodin gateway software contractor is ARINC Research and the hardware contractor is C3, Inc.
- In January 1988, the Air Force made a decision to procure the Defense Data Network Intersite Gateway through an existing contract with Network Solutions, Incorporated, administered by the Ogden Air Logistics Center.

Summary Information for Four Other Individual Projects Managed by the Logistics Command

This section includes information on four other projects being managed by the Logistics Command. The summary information that follows was obtained from the Air Force and includes (1) a project description; (2) general information, including an assessment of the project's status; (3) project costs; (4) project schedule; and (5) contract information. Table II.1 summarizes cost and operational capability for each of the projects.

Table II.1: Project Obligations Compared to Operational Capability

Dollars in millions

Project	Obligations as of July 1988	Percent of current cost estimate obligated	Percent of system operational[a]
Reliability and Maintainability Information System	$48.5	52.1	0.0
Central Procurement Accounting System	10.8	76.5	0.0
Air Force Equipment Management System	2.7	2.9	0.0
Automated Technical Order System (Phase I)	27.7	90.5	100.0
Total	**$89.7**		

[a]In response to our request for percent completion, the Logistics Command responded that there was no recommended standard methodology for calculating the percentage of completion for information system development programs. Instead of percent completed, the Logistics Command provided the percent of operational capability for each project. The percent of operational capability is based on a system achieving full operational capability (100 percent operational) or not attaining initial operating capability (0 percent operational) and may not represent the actual amount of work completed on a project.

Reliability and Maintainability Information System

Description

This information system is designed to edit, process, and store status and utilization data for the Aerospace Vehicles and Trainers Inventory. The maintenance data that will be collected is intended to identify the component/system failures and suggest appropriate corrective actions. The system is also expected to provide information to help identify mission capability and vehicles awaiting parts. Development is planned to be accomplished in three phases.

General Information

- The system is estimated to need 476,000 lines of computer code.
- The system is expected to require the purchase of 248 terminals.
- As reported in the Command LMS Quarterly Progress Report Addendum (June 1988), the overall assessment continues to be unsatisfactory. Contributing to this assessment is a program funding shortfall. The funding shortfall has caused the redirection of the program.

Project Cost Status

Table II.2: Reliability and Maintainability Information System Cost and Obligations

Dollars in millions	
Estimated project cost	$86.1
Operation and maintenance (software)	70.3
Other procurement (hardware)	15.8
Approved funding	$72.8
Total obligations	$48.5
Obligations (software)	32.7
Obligations (hardware)	15.8

- Because of budgetary constraints, there is a $13.3 million funding shortfall in fiscal year 1988.

Estimated Project Schedule

- On November 3, 1987, the program management office issued a stop-work order to Litton Computer Systems for all work beyond initial operational capability, phase I, because of a lack of funding.
- As of June 1988, the estimated completion date is January 1990. The schedule, however, is expected to be adjusted as a result of program funding shortfalls.

Contract Information

- The development contract is firm-fixed-price.
- The development contractor is Litton Computer Systems.

Central Procurement Accounting System

Description

This system is designed to provide weapon system funds' status (initiation, commitment, obligation, and expenditure), budget execution summaries, and foreign military sales data to item, system, functional, and country/case managers.

General Information

- The system is estimated to require 242,000 lines of computer code.
- The system is expected to require the purchase of 160 terminals.
- As reported in the Command LMS Quarterly Progress Report Addendum (June 1988), the overall program assessment continued to be marginal, trending downward.

Project Cost Status

Table II.3: Central Procurement Accounting System Cost and Obligations

Dollars in millions	
Project cost	$11.7
Operation and maintenance (software)	9.8
Other procurement (hardware)	1.9
Approved funding	$11.7
Total obligations	$10.8
Obligations (software)	10.3
Obligations (hardware)	0.5

- The $11.7 million includes a $.2 million funding requirement, established in June 1988, for developing an implementation and conversion test plan.

Estimated Project Schedule

- In June 1988, negotiations were completed for the contractor's request for equitable adjustment. Negotiations resulted in a net cost increase of $2.2 million and a schedule that extends the date of initial operational capability from July 1988 to January 1989.
- Full operational capability is expected to be accomplished in July 1989.

Contract Information

- The development contract is firm-fixed-price.
- The development contractor is Universal Energy Systems.

Air Force Equipment Management System

Description

This management system is scheduled to replace ten existing Air Force Equipment Management Systems with a single data base management system using distributed processing capabilities. The system's purpose is to ensure that the Air Force has the right equipment at the right place at the right time to support the operation and maintenance of weapons systems.

General Information

- The system is expected to require 255,000 lines of computer code.
- The system is expected to require an estimated 640 terminals.
- As reported in the Command LMS Quarterly Progress Report Addendum (June 1988), the overall project assessment is rated satisfactory based on continued progress in the assessment areas and funding.

Project Cost Status

Table II.4: Air Force Equipment Management System Cost and Obligations

Dollars in millions	
Estimated project cost	$77.3
Operation and maintenance (software)	64.0
Other procurement (hardware)	13.3
Approved funding	$77.3
Total obligations	$2.7
Obligations (software)	2.7
Obligations (hardware)	0.0

Estimated Project Schedule

- Estimated completion date is June 1993.

Contract Information

- A firm-fixed-price contract is planned for the system's development.
- A draft request for proposals for a system development contract was issued in May 1988. The final request for proposals is scheduled to be released in January 1989.
- Contract award is scheduled for November 1989.

Automated Technical Order System (Phase I)

Description

The Automated Technical Order System automates the storage and maintenance of technical order data. Digital technical order data is obtained by conversion of contractor-prepared digital data or by computer scanning of paper technical orders. Phase I automated the technical order change generation and publication functions for all Air Logistics Centers and the Aerospace Guidance and Metrology Center. A firm schedule has not been developed for future phases of this system. Automation expedites the change order process and resource requirements for storage and movement of paper technical orders.

General Information

- The system requires 130,000 lines of computer code.
- The system uses 102 terminals.

Project Cost Status

Table II.5: Automated Technical Order System (Phase I) Cost and Obligations

Dollars in millions	
Project cost	$30 6
Operation and maintenance (software)	14 0
Other procurement (hardware)	16 6
Approved funding	$30 6
Total obligations	$27 7
Obligations (software)	14 3
Obligations (hardware)	13 4

Estimated Project Schedule

- The system became fully operational in March 1987.
- The development contract was firm-fixed-price.
- The prime contractor was Syscon Corporation.

Objective, Scope, and Methodology

Based on a request by the Chairman of the Subcommittee on Readiness, House Armed Services Committee, our objective in this interim fact sheet was to present information provided by the Air Force concerning the cost and schedule of selected logistics modernization systems. The modernization projects reported in this fact sheet fall into two categories. The first consists of projects included in the Air Force Logistics Command's Logistics Management Systems Modernization Program; these projects are included in appendix I. The second includes other modernization projects managed by the Logistics Command; these are included in appendix II. For each project, we have provided a description of the project, general information about the project's development, and information on cost, schedule, and contracting.

The estimated project costs and approved funding listed in each project summary are from Headquarters, Air Force Logistics Command data, as reported in its June 31, 1988, Logistics Management Systems Quarterly Report. The approved funding is based on the input of the Deputy Chief of Staff Communication—Computer Systems to the fiscal year 1989 Air Force Logistics Command's financial plan. For fiscal year 1990 and subsequent years, the approved funding is based on the Air Force's Program Objective Memorandum. The cost and schedule information presented is based on published documents or information obtained from Air Force officials from June 1987 through August 1988. General or historical information was also taken from documents prepared prior to June 1987. Contracting information includes the past and current status of contracting actions, contract type, schedules for requests for proposals, contract award dates, and identity of the contractor.

This report is based on Air Force information and does not include any conclusions or recommendations. We did not independently assess the validity of the data. We performed our work in accordance with generally accepted auditing standards.

Appendix IV

Major Contributors to This Report

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